

**PATENT APPLICATION**  
**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No: Q77821

Hirohisa OHTA, et al.

Appln. No.: 10/679,375

Group Art Unit: 3682

Confirmation No.: 4285

Examiner: Terence Boes

Filed: October 7, 2003

For: ACTUATOR FOR OPERATING A TRANSMISSION CONTROL VALVE OF AN  
AUTOMATIC TRANSMISSION APPARATUS

**RESPONSE TO NON-COMPLIANT APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

**MAIL STOP APPEAL BRIEF - PATENTS**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

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**I. REAL PARTY IN INTEREST**

The real party in interest is assignee MITSUBISHI DENKI KABUSHIKI KAISHA of Japan, by virtue of an assignment recorded at reel 014591, frame 0958.

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**II. RELATED APPEALS AND INTERFERENCES**

There are no prior or pending appeals, judicial proceedings or interferences known to the appellant which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

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**III. STATUS OF CLAIMS**

Claims 1-6 and 12-13 have been canceled. Claims 7-11 are all the claims pending, have been rejected, and are the subject of this appeal.

**IV. STATUS OF AMENDMENTS**

Subsequent to the Examiner's Final Office Action mailed on November 22, 2006, an Amendment Under 37 C.F.R. § 1.116 was filed on February 22, 2007, a first Supplemental Amendment Under 37 C.F.R. § 1.116 was filed on April 23, 2007, and a second Supplemental Amendment Under 37 C.F.R. § 1.116 was filed on May 9, 2007. The Examiner did not enter the claim amendments in the Amendments filed on February 22, 2007 and April 23, 2007.

An Advisory Action was received on May 15, 2007 indicating the claim amendments of the Amendment filed May 9, 2007 would be entered. Accordingly, the claims stand as presented in the second Supplemental Amendment filed on May 9, 2007.

**V. SUMMARY OF THE CLAIMED SUBJECT MATTER**

The presently claimed invention relates to an automatic transmission control value actuator. (page. 1, lines 2-5).

In a transmission control value a pressure difference arises between an internal portion and an external portion of the housing as a result of the reciprocating motion of a shaft. (page 2, lines 2-4). Accordingly, a communicating aperture communicating between an internal part of the housing and an external part of the housing to alleviate this pressure difference may be used. Furthermore, in order to prevent contaminants from entering the internal part of the housing, a filter is disposed in the communicating aperture. (page 2, lines 8-10). However, the process of fixing the filter using an adhesive in the communicating aperture increased the cost of manufacturing. (page 2, lines 14-17)

In view of the above-noted problems, it is an aspect of the presently claimed invention to improve the assembly of the actuator by aligning the filter, the shaft, the rotor and the housing along the motor central axis. (page 5, lines 2-6). In order to achieve the above aspect, with reference to the exemplary embodiment of Figs. 1-3, the actuator for operation a transmission control value comprises:

a stepping motor comprising **1**: (page 5, line 26 - page 6, line 5)

an exterior casing **2** having a first end and a second end in a direction of a motor central axis **A**;

a motor main body **3** composed of: (page 5, line 8 - page 6 line 1)

a stator **5** disposed inside said exterior casing **2**; and

a rotor **6** rotatably disposed inside said stator **5** around said motor central axis **A**,  
said rotor **6** being having magnets constituting magnetic poles mounted to an

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outer circumferential surface of a cylindrical bush **10**, and an internal thread portion being **10b** formed on an inner peripheral wall surface of said bush **10**; and a shaft **4** having a first end and a second end, said shaft **4** being disposed such that said second end thereof projects outward from said exterior casing **2** at a position of said motor central axis **A** by screwing an external thread portion formed on said first end of said shaft **4** into said internal thread portion **10b** of said bush **10**; (page 6, lines 25-29)

a housing **12** linked to said second end of said exterior casing **2** in said direction of said motor central axis **A**, said second end of said shaft **10** projecting outward from said housing **12** along said direction of said motor central axis **A**; (page 7, lines 2-20)

a power conversion mechanism **20, 12b** for converting torque acting around said motor central axis **A** of said rotor **6** into a motive force in a direction along said motor central axis **A** by regulating rotation of said shaft **4** so as to move said shaft **4** in said direction along said motor central axis **A**; and (page 7, lines 21-27)

an operating member **22** mounted to a second end portion of said shaft projecting outward from said housing, said operating member being moved in said direction along said motor central axis **A** to operate said transmission control valve, (page 7, lines 14-20)

wherein a penetrating aperture **12c** is disposed through said first end of said exterior casing **2** in said direction of said motor central axis **A** so as to communicate between an interior portion of said bush **10** and an exterior portion of said exterior casing **2**, and a filter **23** is

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disposed so as to cover said penetrating aperture **12c** from said second end of said exterior casing  
**2** in said direction of said motor central axis **A**.



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**VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

(1) The Examiner rejected claims 7-11 under 35 U.S.C. § 112, second paragraph, as being indefinite.

(2) The Examiner rejected claims 7, 10 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Suzuki et al. (US 2002/00433880) in view of Jenkin (US 3,639,791).

(3) The Examiner rejected claims 8 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Suzuki in view of Jenkin (US 3,639,791), further in view of Scott (US 2002/0063492).

## **VII. ARGUMENT**

*(1) The Examiner rejected claims 7-11 under 35 U.S.C. § 112, second paragraph, as being indefinite.*

Appellants respectfully traverse this rejection because the terminology used in the claim is sufficiently definite such that one having ordinary skill in the art would understand, especially in light of the content of the application, the subject matter with a reasonable degree of clarity.

In particular, the Examiner alleges the phrase “a first end and a second end in a direction of a motor central axis,” of claim 7 is unclear. The Examiner, without using the present specification as context, questions whether the Appellants are claiming that the first and second ends are oriented or aligned in a direction of a central axis, or whether Appellants are claiming that the first end and second end are located in a direction of a motor central axis. (*November 22, 2006, Office Action*, p. 2). Appellants submit the recitation is self clarifying as it recites “in a direction of a motor central axis.” Thus, Appellants submit the claim distinctly points to the Examiner’s first interpretation related to an orientation or alignment.

In contrast, the Examiner second interpretation is a narrow and strained reading. Specifically, Appellants find it difficult to understand how one of ordinary skill in the art would even contemplate the Examiner’s second interpretation, which would include an infinite number of specific locations simply “pointing” toward the motor central axis.

Consequently, Appellants respectfully submit the present phrasing is sufficiently definite such that one of ordinary skill in the art would apply the ordinary orientational/alignment

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meaning proffered by the Examiner as the only one that comports with the usual meaning of “in the direction of the motor central axis” and makes logical sense.

Furthermore, it is repeated throughout the specification that an improved aspect of the invention resides in aligning the filter, shaft, rotor and housing with the direction of the motor central axis, this feature also being illustrated in the original drawings. (see, e.g., page. 5, lines 2-6). Consequently, it takes a concerted effort, including ignoring the entire specification and drawings, to misconstrue Appellants’ chosen phrasing. Appellants therefore submit that one of ordinary skill in the art would read the phrase as a orientation/alignment feature in accord with the specification’s disclosure.

Thus, Appellants respectfully submit this rejection is in error for at least the reasons set forth above.

*(2) The Examiner rejected claims 7, 10 and 11 under 35 U.S.C. § 103(a) as being unpatentable over Suzuki et al. (US 2002/00433880) in view of Jenkin (US 3,636,791).*

Appellants respectfully traverse this rejection because, in order to compensate for the deficiencies of the art in the field of the invention (i.e. Suzuki, a linear type actuator), the Examiner selectively picks and chooses elements from the wholly distinct and distant art of hydrostatic bearings, (i.e., Jenkins), without articulating a valid reason that would prompt one of ordinary skill in the art to combine the elements as recited in claim 7.

The Examiner alleges that Suzuki discloses most of the features of the rejected claims, but concedes that Suzuki fails to disclose a penetrating aperture through a first end of said

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exterior casing, or a filter disposed so as to cover said penetrating aperture from said second end of said exterior casing. To compensate for this deficiency, the Examiner applies Jenkins, alleging it teaches a penetrating aperture disposed through a first end of an exterior casing so as to communicate between an interior portion of a bushing and an exterior portion of said exterior casing, and a filter disposed to cover the penetrating aperture from said second end of the exterior casing.

As a justification for the combination, the Examiner alleges that one having ordinary skill in the art at the time of the invention would modify the teachings of Suzuki with a penetrating aperture and filter, as taught by Jenkins, for the purpose of circulating a fluid, providing a communicating fluid path with a filter, and filtering contaminants from the fluid to provide for a smooth operation and extended life.

Applicants submit that this reasoning is wholly unsupported by logic, and thus, appears to be the result of a hindsight piecemeal dissection of Jenkins. First, neither Suzuki nor any related art provides a rationale for the Examiner's reasoning. In particular, Suzuki fails to address or even contemplate any external or internal fluid communication. Further, Suzuki fails to even indicate the fluid environment under which its linear actuator may be used.

Jenkins, on the other hand, is directed to a hydrostatic air bearing that provides no linear movement. The movement in Jenkins is rotational. Furthermore, the fluid movement in Jenkins is not the result of a natural pressure difference between the internal portions and external portions of the cover 32. Rather, the fluid movement in Jenkins is a forced fluid movement

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necessary to an air bearing. Specifically, Jenkins relies on a high pressure air source via input conduit 41 to create bearing clearance between two coaxial members of a bearing assembly. (col. 1, lines 40-50, col. 2, lines 71-75; FIG. 1). Notably, these sort of hydrostatic bearings rely on axially spaced high pressure regions each being bounded by a low pressure region. (col. 1, lines 45-50). In this particular configuration, the “inner bearing member is provided with an internal passage for connection to a source of fluid under pressure and at least two axially spaced sets of radial holes. These holes communicate with the bearing clearance between the inner and outer members to define the high pressure regions in the bearing clearance.” (col. 1, lines 61-65).

However, because Jenkins’ particular configuration of high pressure regions and low pressure regions creating the hydrostatic bearing are not present within Suzuki, there is no rational basis for supplying the aperture, i.e., input conduit, for supplying high pressure air or the filter 38 to filter the air. The reason for including this source of air is solely to provide bearing support. (col. 1, lines 9-13). Because the actuator of Suzuki does not constitute a hydrostatic bearing and otherwise fails to contain any of the features taught by Jenkins as essential to the function of a hydro-static bearing, Applicants submit that one of ordinary skill in the art would find no reason to combine Jenkins with Suzuki as suggested by the Examiner. There is simply no objective basis to provide an opening 36 so as to provide a source of air under pressure. Moreover, Jenkins provides no other reason for introducing an opening 36, except as an air supply for a hydrostatic bearing.

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Thus, because the Examiner has failed to articulate any rational basis that would prompt one of ordinary skill in the art to combine the features of Jenkins and Suzuki as suggested, Appellants respectfully submit the Examiner has failed to establish *prima facie* obviousness. Accordingly, Appellants submit claims 7, 10 and 11 are allowable over the applied combination of Jenkins and Suzuki.

*(3) The Examiner rejected claims 8 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Suzuki in view of Jenkins (US 3,639,791) in further view of Scott (US 2002/0063492).*

Appellants respectfully submit that because Scott fails to compensate for the Examiner's failure to establish *prima facie* obviousness as discussed above, claims 8 and 9 are allowable for the same reasons set forth above, and by virtue of their dependency.

**Conclusion**

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.


SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

Respectfully submitted,



David P. Emery  
Registration No. 55,154

Date: September 24, 2007

**CLAIMS APPENDIX**

CLAIMS 7-11 ON APPEAL:

7. An actuator for operating a transmission control valve of an automatic transmission apparatus, said actuator comprising:

a stepping motor comprising:

an exterior casing having a first end and a second end in a direction of a motor central axis;

a motor main body composed of:

a stator disposed inside said exterior casing; and

a rotor rotatably disposed inside said stator around said motor central axis, said rotor being having magnets constituting magnetic poles mounted to an outer circumferential surface of a cylindrical bush, and an internal thread portion being formed on an inner peripheral wall surface of said bush; and

a shaft having a first end and a second end, said shaft being disposed such that said second end thereof projects outward from said exterior casing at a position of said motor central axis by screwing an external thread portion formed on said first end of said shaft into said internal thread portion of said bush;

a housing linked to said second end of said exterior casing in said direction of said motor central axis, said second end of said shaft projecting outward from said housing along said direction of said motor central axis;



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a power conversion mechanism for converting torque acting around said motor central axis of said rotor into a motive force in a direction along said motor central axis by regulating rotation of said shaft so as to move said shaft in said direction along said motor central axis; and

an operating member mounted to a second end portion of said shaft projecting outward from said housing, said operating member being moved in said direction along said motor central axis to operate said transmission control valve,

wherein a penetrating aperture is disposed through said first end of said exterior casing in said direction of said motor central axis so as to communicate between an interior portion of said bush and an exterior portion of said exterior casing, and a filter is disposed so as to cover said penetrating aperture from said second end of said exterior casing in said direction of said motor central axis.

8. The automatic transmission apparatus transmission control valve operating actuator according to Claim 7, wherein said magnets are rare-earth magnets.

9. The automatic transmission apparatus transmission control valve operating actuator according to Claim 8, wherein said rare-earth magnets are neodymium bonded magnets.

10. The automatic transmission apparatus transmission control valve operating actuator according to Claim 7, wherein:

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said power conversion mechanism is provided with:

a rotation-regulating projection portion formed so as to project radially outward on a portion of said shaft that projects outward from said exterior casing; and

a guide groove disposed so as to extend along an inner wall surface of said housing such that a groove direction of said guide groove is aligned with said direction of said motor central axis, said rotation-regulating projection portion fitting loosely into said guide groove.

11. The automatic transmission apparatus transmission control valve operating actuator according to Claim 7, wherein said operating member is formed integrally by injection molding on a tip portion of said shaft projecting outward from said housing.

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**EVIDENCE APPENDIX:**

NONE.

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**RELATED PROCEEDINGS APPENDIX**

NONE.